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NOMA IN THE DOG

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Fusiform bacilli and spirilla are so universally found in the morbid tissues of noma, hospital gangrene, Vincent's angina, gangrenous balanitis, and other phagadenic processes [1] that, in the light of our present knowledge, most writers believe that we are justified in considering them as the possible if not the probable causative agent in these processes. Gins [2] records the finding of bacilli identical with B. fusiformis in the intestines of lower animals, and Warthin [3] mentions finding these bacilli in the intestinal discharges of a dog affected with dysentery. We have not found, however, any previous report of a typical noma, containing these organisms, in a dog.

In a number of instances epidemics of noma have been reported as following outbreaks of other infectious diseases in institutional homes and hospitals for children.[4] Some years ago one of us saw an extensive epidemic of this kind in the diphtheria wards of the Municipal Hospital of Philadelphia, following an epidemic of measles. During the late war Campbell and Dyas [5] reported epidemics of an ulcerative condition of the mouth and throat, called "trench mouth," in which spirilla and fusiform bacilli were found in the lesions. Warthin [3] states, "Vincent's angina is regarded as directly and indirectly contagious within rather narrow limits. The affection often involves definite groups of students living in close association. A similar group-infection of nurses and hospital attendants has been observed." Such epidemics would suggest the possibility of these organisms becoming so exalted in virulence under certain conditions as to be more or less highly contagious. In fact Barker and Miller [6] state "there is positive evidence both as to the infectiousness and the

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[1] Weaver and Tunnicliff: J. Infect. Dis., 1907, 4, p. 8. King: Jour. Am. Med. Assn., 1911, 66, p. 1449. Nicoll: Archives of Pediatrics, 1911, 25, p. 912. Rothwell: Jour Am. Med. Assn., 1910, 54, p. 1867. Arrow-Smith: Annals of Otol., Rhin. and Laryng., 1910. McKinnistry: Practitioner, 1917, 99, p. 507.

[2] Handbuch d. pathog. Mikroorg., 1915, 5, p. 1007.

[3] Ref. Handbook Med. Sci., 1913, 1, p. 438.

[4] Bloomer and McFarland: Amer. Jour. Med. Sc., 1901, 122, p. 527.

[5] Jour. Am. Md. Assn., 1917, 68, p. 1596.

[6] Jour. Am. Med. Assn., 1918, 71, p. 793.

contagiousness of Vincent's disease." Therefore we consider the following case of interest as being a possible source of contagion to man.

A cocker spaniel about 9 months of age, developed a mild attack of canine distemper in March, 1918. About the time that he had apparently recovered, a peculiar and most offensive odor was noticed about the animal. Examination disclosed a tumefaction of the right lower lip as large as a quarter. On the fourth day after this an oval, black eschar appeared on its most prominent point, and salivation became profuse. An indurated, hard, dark red area surrounded the eschar. In a few days a conical ulcer formed, covered with a grayish, slimy, easily separated, and very offensive exudate. This ulcer gradually extended until on the thirteenth day of the disease it had eroded into the tissues of the neck and the ramus of the jaw, exposing the loosened molar teeth in their blackened sockets, and had attained a diameter of 3 inches. For about 8 days the general condition of the animal was astonishingly good. He ate well but seemed to suffer much from thirst. Then he became prostrated, and on the twelfth day symptoms of pneumonia developed. The dog was killed when moribund on the thirteenth day but necropsy was not obtained. On the eighth day of the disease a similar ulcer appeared on the left lip, but never became more than one-fourth the size of the original lesion.

Smears made in the early stage of the disease, soon after the appearance of the slimy exudate on the surface of the eschar, and stained with dilute carbolfuchsin, revealed the presence of about equal numbers of fusiform bacilli and spirilla, with only a few micrococci and short bacilli. The microscopic picture was striking on account of the great number of fusiform bacilli and spirilla and the small number of other organisms.

Smears were made from day to day from the lesions as the disease progressed. The microscopic picture did not vary greatly in the different preparations. The flora changed to some extent, but B. fusiformis and the spirilla greatly predominated in all smears.

A point which interested us, and one which has been noted by other observers, was the different appearance of the fusiform bacilli in the early and late stages of the disease. In the first smear these bacilli were rather uniform in size, only slightly if at all curved, and stained somewhat uniformly with dilute fuchsin. In smears made late in the disease, however, there were few bacilli of the type just described but involution forms were numerous. These stained unevenly, were much larger, and many were curved similarly to the spirilla; in fact, many long bacilli resembled thick spirilla.

Cultures were made early in the disease from the exudate in glucose horse-serum agar, both slants and stabs, and all tubes were incubated anaerobically at 37 C. for 5 days. Growth appeared in all tubes but smears from these cultures showed a mixed flora, largely micrococci. In one stab culture a few spirilla were found. In none of the cultures could we definitely identify B. fusiformis. We were inclined to interpret the few spirilla in this culture as a direct transfer of the original heavy inoculum and not a multiplication of these organisms.

Smears were prepared from the gums of a number of normal dogs in the same kennel as the case described. The majority of these smears contained B. fusiformis and spirilla, but usually in relatively small numbers. Eighteen months later the same normal dogs were examined and the results were quite similar to the first examination.

The occurrence in a dog of a noma so similar to that in man makes it appear possible that the dog may be a source of infection to man, especially to persons recovering from acute diseases who are therefore more susceptible to such infection.

In view of the fact that it has not been definitely settled whether B. fusiformis and the spirilla are symbiotic organisms or different forms of the same organisms, and further that inoculations of both the original material and pure cultures have been almost uniformly unsuccessful in producing characteristic lesions in animals, it is suggested that dogs be used for such experiments. And since noma is almost unknown in children not weakened by some previous disease, but follows various acute infections such as measles, whooping cough, etc., the chance of successfully producing noma by inoculations might be increased if dogs suffering from a mild attack of canine distemper were used in the experiment.

SUMMARY

A condition in a dog apparently identical in symptomatology and bacteriologic findings with the disease known as noma is recorded.

Attention is called to the possibility of contagion of Vincent's organisms from dogs to man.